

# STEMonstrations



**POTENTIAL & KINETIC ENERGY**

1  
00:00:00,533 --> 00:00:15,215

[ MUSIC ]

2  
00:00:15,215 --> 00:00:16,182

>> WELCOME TO THE INTERNATIONAL

3  
00:00:16,182 --> 00:00:17,484

SPACE STATION.

4  
00:00:17,484 --> 00:00:19,152

I'M ASTRONAUT JOE ACABA.

5  
00:00:19,152 --> 00:00:20,420

TODAY WE'RE GOING TO TALK

6  
00:00:20,420 --> 00:00:21,855

ABOUT POTENTIAL AND

7  
00:00:21,855 --> 00:00:23,189

KINETIC ENERGY.

8  
00:00:23,189 --> 00:00:25,959

LET'S GET STARTED.

9  
00:00:25,959 --> 00:00:27,627

KINETIC ENERGY IS THE ENERGY

10  
00:00:27,627 --> 00:00:29,496

AN OBJECT HAS BECAUSE OF

11  
00:00:29,496 --> 00:00:31,231

ITS MOTION.

12  
00:00:31,231 --> 00:00:32,632

AN OBJECT CAN STORE ENERGY

13  
00:00:32,632 --> 00:00:34,234

BASED ON ITS POSITION-- THIS IS

14

00:00:34,234 --> 00:00:37,437  
CALLED POTENTIAL ENERGY.

15

00:00:37,437 --> 00:00:38,638  
ON EARTH, IMAGINE

16

00:00:38,638 --> 00:00:39,639  
DROPPING AN OBJECT FROM

17

00:00:39,639 --> 00:00:41,241  
A RAISED POSITION.

18

00:00:41,241 --> 00:00:42,575  
AS AN OBJECT'S ALTITUDE ABOVE

19

00:00:42,575 --> 00:00:44,577  
THE EARTH'S SURFACE INCREASES,

20

00:00:44,577 --> 00:00:45,578  
ITS GRAVITATIONAL POTENTIAL

21

00:00:45,578 --> 00:00:48,415  
ENERGY ALSO INCREASES.

22

00:00:48,415 --> 00:00:49,516  
THE POTENTIAL ENERGY STORED

23

00:00:49,516 --> 00:00:50,650  
DUE TO ITS POSITION

24

00:00:50,650 --> 00:00:51,851  
IS NOW BEING CONVERTED

25

00:00:51,851 --> 00:00:54,454  
TO KINETIC ENERGY.

26  
00:00:54,454 --> 00:00:55,889  
WE ALSO OBSERVE THIS WITH

27  
00:00:55,889 --> 00:00:58,825  
ELASTIC POTENTIAL ENERGY.

28  
00:00:58,825 --> 00:01:00,360  
>> OKAY, NEW TERM.

29  
00:01:00,360 --> 00:01:01,761  
ELASTIC POTENTIAL ENERGY

30  
00:01:01,761 --> 00:01:02,896  
OCCURS WHEN OBJECTS ARE

31  
00:01:02,896 --> 00:01:04,164  
COMPRESSED AND STRETCHED,

32  
00:01:04,164 --> 00:01:05,398  
OR GENERALLY DEFORMED

33  
00:01:05,398 --> 00:01:06,833  
IN ANY MANNER, CREATING

34  
00:01:06,833 --> 00:01:08,368  
POTENTIAL ENERGY.

35  
00:01:08,368 --> 00:01:09,369  
THINK OF THIS BUNGEE,

36  
00:01:09,369 --> 00:01:11,404  
OR A SPRING.

37  
00:01:11,404 --> 00:01:13,840  
OKAY, JOE, WHAT'S NEXT?

38  
00:01:13,840 --> 00:01:14,974

>> WE PULL BACK ON THE BAND

39

00:01:14,974 --> 00:01:18,478  
AND CREATE POTENTIAL ENERGY.

40

00:01:18,478 --> 00:01:19,579  
WHEN WE RELEASE THE POTENTIAL

41

00:01:19,579 --> 00:01:21,114  
ENERGY, IT'S CONVERTED

42

00:01:21,114 --> 00:01:25,218  
TO KINETIC ENERGY.

43

00:01:25,218 --> 00:01:26,486  
HERE ON THE INTERNATIONAL

44

00:01:26,486 --> 00:01:28,455  
SPACE STATION, WE ARE STILL

45

00:01:28,455 --> 00:01:29,622  
UNDER THE INFLUENCE OF

46

00:01:29,622 --> 00:01:31,391  
GRAVITY, PRIMARILY DUE TO

47

00:01:31,391 --> 00:01:33,726  
OUR POSITION WITH THE EARTH.

48

00:01:33,726 --> 00:01:34,861  
SO WHEN I HAVE THIS BALL

49

00:01:34,861 --> 00:01:36,463  
ON THIS RAMP, NORMALLY

50

00:01:36,463 --> 00:01:37,764  
BACK ON EARTH, I RELEASE

51  
00:01:37,764 --> 00:01:39,766  
THE BALL AND IT ROLLS

52  
00:01:39,766 --> 00:01:41,734  
DOWN THE RAMP DUE TO A CHANGE

53  
00:01:41,734 --> 00:01:43,536  
IN ITS POTENTIAL ENERGY

54  
00:01:43,536 --> 00:01:44,537  
THAT'S BEING TRANSFERRED

55  
00:01:44,537 --> 00:01:46,039  
TO KINETIC ENERGY.

56  
00:01:46,039 --> 00:01:47,173  
BUT AS YOU CAN SEE,

57  
00:01:47,173 --> 00:01:48,908  
IT DOESN'T HAPPEN HERE.

58  
00:01:48,908 --> 00:01:50,243  
SO IT DOESN'T MEAN THAT

59  
00:01:50,243 --> 00:01:51,277  
WE DON'T HAVE POTENTIAL

60  
00:01:51,277 --> 00:01:52,512  
ENERGY-- IT JUST MEANS

61  
00:01:52,512 --> 00:01:53,546  
WE'RE NOT CONVERTING IT

62  
00:01:53,546 --> 00:01:56,316  
AT THIS TIME TO KINETIC ENERGY.

63  
00:01:56,316 --> 00:01:58,418

AND WHY IS THAT?

64

00:01:58,418 --> 00:02:00,820  
GRAVITY IS PULLING US DOWN,

65

00:02:00,820 --> 00:02:03,289  
BUT WE'RE MOVING SUPER FAST.

66

00:02:03,289 --> 00:02:04,190  
AND SO WHAT IT IS IS

67

00:02:04,190 --> 00:02:05,258  
WE'RE BENDING AROUND

68

00:02:05,258 --> 00:02:06,860  
THE EARTH IN THIS PERPETUAL

69

00:02:06,860 --> 00:02:09,929  
FALLING MOTION.

70

00:02:09,929 --> 00:02:10,697  
THANKS FOR JOINING ME

71

00:02:10,697 --> 00:02:11,798  
ONBOARD THE INTERNATIONAL

72

00:02:11,798 --> 00:02:12,932  
SPACE STATION.

73

00:02:12,932 --> 00:02:13,700  
WE'RE SENDING IT

74

00:02:13,700 --> 00:02:14,667  
BACK TO EARTH SO YOU CAN

75

00:02:14,667 --> 00:02:16,269  
TRY YOUR OWN EXPERIMENT.

